WHAT IS CLAIMED IS:

1. An electrophoresis apparatus comprising:

a transport capillary capable of directing flow of a sample solution to be analyzed;

a plurality of separation capillaries coupled to the transport capillary forming a plurality of analyte concentrators having affinity ligands capable of attracting at least one analyte of interest from the sample solution that passes through each of the analyte concentrators; and

a plurality of valves located on the transport capillary and on the plurality of separation capillaries, where the valves on the transport capillary control the flow of the sample solution through the transport capillary and the valves on the plurality of separation capillaries control the flow of fluid through each of the plurality of separation capillaries, whereby each of the analyte concentrators can be localized by the valves on the transport capillary and the plurality of separation capillaries.

2. The apparatus according to claim 1, where each of the valves is movable between a first position and a second position, where in the first position the valves are opened to allow the fluid to flow through the respective capillary and in the second the valves are closed to substantially prevent the flow of fluid through the respective capillary.

3. The apparatus according to claim 1, further including a matrix-assembly in each of the analyte concentrators, where at least one of the affinity ligands in each of the analyte concentrator is bound to the surface of the matrix-assembly.

4. The apparatus according to claim 3, where the matrix-assembly is a plurality of microstructures taken from the group consisting of beads, platelets, chips, fibers, polymers, globules, and filaments.

5. The apparatus according to claim 3, where the analyte concentrator retains the matrix-assembly by pressure-resistant porous end walls disposed in the transport capillary and the separation capillary.

6. The apparatus according to claim 3, where the matrix assembly includes a fixed architecture that is defined by beaded microstructures interconnected to each other and to a portion of the separation capillary.

7. The apparatus according to claim 3, where the matrix assembly includes a fixed architecture that is fabricated from polymeric microstructures interconnected to each other and to a portion of the separation capillary.

8. The apparatus according to claim 1, where each of the separation capillaries is capable of separating at least one analyte retained by at least one of the affinity ligands, after the analyte is released from the at least one affinity ligands.

9. The apparatus according to claim 8, where each of the separation capillaries is capable of separating at least one of the released analyte from the affinity ligands by at least one mode of capillary electrophoresis.

10. The apparatus according to claim 1, where each of the separation capillaries has an inlet and an outlet, where the analyte concentrator for the respective separation capillary is between the inlet and the outlet, further including an auxiliary capillary coupled to the respective separation capillary between the analyte concentrator and the outlet to provide a second fluid to the respective separation capillary away from the analyte concentrator.

11. The apparatus according to claim 1, further including an auxiliary analyte concentrator downstream from the analyte concentrator on one of the separation capillaries, the auxiliary analyte concentrator having affinity ligands capable of retaining chromophores to bind to the at least one analyte of interest released from the analyte concentrator to improve the sensitivity and selectivity of the at least one analyte of interest.

12. The apparatus according to claim 1, where each of the separation capillaries is hollow and filled with an electrically conductive fluid.

13. The apparatus according to claim 1, where each of the separation capillaries is hollow and filled with a gel matrix and an electrically conductive fluid.

14. The apparatus according to claim 1, where each of the analyte concentrators has an independent temperature controlled system.

15. The apparatus according to claim 1, where each of the separation capillaries has an independent temperature controlled system.

16. The apparatus according to claim 1, where each of the separation capillaries is in a linear configuration.

17. The apparatus according to claim 1, where each of the separation capillaries is in a coiled configuration.

18. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of purifying at least one analyte present in a simple solution.

19. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of purifying at least one analyte in a complex solution.

20. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing a chemical reaction.

21. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing multi-component chemical reactions.

22. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing a biochemical reaction.

23. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of multi-component biochemical reactions.

24. The apparatus according to claim 1, where each of the analyte concentrators has an encapsulated subcellular structure to carry drug metabolism studies.

25. The apparatus according to claim 1, where each of the analyte concentrators has an encapsulated cellular structure to carry drug metabolism studies.

26. The apparatus according to claim 1, where each of the analyte concentrators has an acoustic micromixing system to improve the reaction in the analyte concentrators.

27. The apparatus according to claim 1, where each of the analyte concentrators has a microwave pulse system to improve the reaction in the analyte concentrators.

28. The apparatus according to claim 1, where the affinity ligands in each of the analyte concentrators are covalently bound to a matrix assembly within the analyte concentrator.

29. The apparatus according to claim 1, where two adjacent transport capillaries are staggered at each of the analyte concentrators to elongate each of the analyte concentrators.

30. The apparatus according to claim 1, where the immobilized affinity ligands are bound to a portion of the inner wall of the separation capillary forming the analyte concentrator.

31. The apparatus according to claim 1, where the immobilized affinity ligands in each of the analyte concentrators attract at least one analyte of interest from the sample solution having a range of concentrations.

32. The apparatus according to claim 1, further including an outlet capillary near a detection area, where the plurality of separation capillaries merge at the outlet capillary and

an outlet valve is provided on each of the separation capillaries near the outlet capillary to sequentially control the direction of the fluid through the desired separation capillary and towards the location of the detection area with the outlet valve being opened.

33. The apparatus according to claim 1, further including at least one detector for identifying, quantifying, and characterizing the analyte of interest released from the affinity ligands and passing through at least one of the plurality separation capillaries.

34. The apparatus according to claim 33, where the detector includes a detection system that is selected from a group consisting of ultraviolet, fluorescence, conductivity, electrochemical, radioactive, mass spectrometer, circular dichroism, and nuclear magnetic resonance.

35. The apparatus according to claim 1, where the analyte concentrator is a microextraction device using immobilized affinity ligands within the microextraction device.

36. The apparatus according to claim 35, where the analyte concentrator has a transport port adapted to couple to the transport capillary and a separation port adapted to couple to the separation capillary, where the transport and separation ports intersect to form a concentration area to retain the affinity ligands.

37. The apparatus according to claim 35, where the concentration area is surrounded by bulging members to retain the matrix containing immobilized affinity ligands within the concentration area.

38. The apparatus according to claim 35, further including a plurality of valves movably coupled to the transport and separation ports to surround the concentration area to control the flow of the sample solution through the transport port and flow of fluid through the separation port.

39. The apparatus according to claim 1, where the transport and separation capillaries have openings, where the opening for the transport capillary is larger than the openings for the separation capillaries.

40. An electrophoresis apparatus having a transport capillary adapted to provide a sample solution to be analyzed and at least one separation capillary to provide buffer solution, the electrophoresis apparatus comprising:

at least one analyte concentrator at the intersection between the transport capillary and the at least one separation capillary, the at least one analyte concentrator capable of attracting at least one analyte of interest from the sample solution; and

a plurality of valves on the transport and separation capillaries to surround the analyte concentrator to control the flow of the sample and buffer solutions to the analyte concentrator.

41. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly that is free and retained within the concentrator by frits provided in the transport and separation capillaries.

42. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly that is a plurality of microstructures selected from a group consisting of beads, platelets, chips, fibers, polymers, globules, and filaments.

43. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly having movable bead microstructures retained within the concentrator by pressure-resistant porous end walls disposed in the transport capillary and the separation capillary.

44. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly having a fixed architecture defined by interconnected beaded microstructures.

45. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly having a fixed architecture that is defined by magnetic beaded microstructures capable of being retained by magnetic attraction.

46. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes a matrix assembly having a fixed architecture that is defined by interconnected polymeric microstructures.

47. The electrophoresis apparatus according to claim 46, where the polymeric microstructures are formed from a monolithic lattice.

48. The electrophoresis apparatus according to claim 46, where the polymeric microstructures are formed from a sol-gel lattice.

49. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are adsorbed by beaded structures, and the affinity ligands are attracted to the at least one analyte of interest from the sample solution.

50. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are adsorbed by polymeric structures, and the affinity ligands are attracted to the at least one analyte of interest.

51. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are adsorbed to a portion of the inner wall of the separation capillary forming the analyte concentrator, and the affinity ligands are attracted to the at least one analyte of interest.

52. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are covalently bound to beaded structures, and the affinity ligands are attracted to the at least one analyte of interest.

53. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are covalently bound to polymeric structures, and the affinity ligands are attracted to at least one analyte of interest.

54. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are covalently bound to a portion of the inner wall of the separation capillary forming the analyte concentrator, and the affinity ligands are attracted to at least one analyte of interest.

55. The electrophoresis apparatus according to claim 40, where the analyte concentrator includes affinity ligands that are selected from a group consisting of whole antibodies, antibody fragments, lectins, aptamers, chemical dyes, protein A, protein G, substrates, enzymes, proteins, peptides, DNA, RNA, oligonucleotides, carbohydrates, cation exchange resins, anion exchange resins, immobilized metal affinity capture resins, mixed-mode resins, ions, aminoacids, monossacharides, fatty acids, vitamins, metabolites, viruses, bacteria, cells, and subcellular organelles.

56. The electrophoresis apparatus according to claim 55, further including a matrix assembly with at least one of the affinity ligands.

57. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands purify at least one analyte present in a simple solution having a wide range of concentrations.

58. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands purify at least one analyte in a complex solution having a wide range of concentrations.

59. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform a chemical reaction.

60. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform multi-component chemical reactions.

61. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform a biochemical reaction.

62. The apparatus according to claim 40, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform multi-component biochemical reactions.

63. The apparatus according to claim 40, where each of the analyte concentrators has an encapsulated subcellular structure to carry drug metabolism studies.

64. The apparatus according to claim 40, where each of the analyte concentrators has an encapsulated cellular structure to carry drug metabolism studies.

65. The apparatus according to claim 40, where each of the analyte concentrators has an acoustic micromixing system to improve the reaction in the analyte concentrators.

66. The apparatus according to claim 40, where each of the analyte concentrators has a microwave pulse system to improve the reaction in the at least one analyte concentrator.

67. The apparatus according to claim 40, where each of the analyte concentrators include antibodies immobilized on the surface of a matrix-like assembly.

68. The apparatus according to claim 40, where each of the analyte concentrators include antibody fragments immobilized to the surface of a matrix-like assembly.

69. The apparatus according to claim 40, where the valves on the transport capillary are opened and the valves on the separation capillary are closed to allow the sample solution to pass through the concentrator.

70. The apparatus according to claim 40, where the valves on the transport capillary are closed and the valves on the separation capillary are opened to allow the buffer solution to pass through the concentrator.

71. The apparatus according to claim 40, where the plurality of valves include first and second valves on the transport capillary and third and fourth valves on the separation capillary, where the concentrator is between the first and second valves and between the third and fourth valves, where the first and second valves control the flow of sample solution to the concentrator and the third and fourth valves control the flow of buffer solution to the concentrator.

72. The apparatus according to claim 40, further including an auxiliary capillary coupled to the separation capillary downstream from the analyte concentrator to provide separation buffer to the separation capillary through the auxiliary capillary away from the at least one concentrator.

73. The apparatus according to claim 40, further including an auxiliary analyte concentrator downstream from the analyte concentrator on one of the separation capillaries, the auxiliary analyte concentrator having affinity ligands capable of retaining chromophores to bind to the at least one analyte of interest released from the analyte concentrator to improve the sensitivity and selectivity of the at least one analyte of interest.

74. The apparatus according to claim 40, where the sample solution has a plurality of proteins with a variety of isoelectric point levels, and the transport capillary provides a pH gradient and is subject to an electric field through the transport capillary for isoelectric focusing separation of the proteins in the sample solution.

75. The apparatus according to claim 74, where the at least one separation capillary is a plurality of separation capillaries, where the proteins that are separated from the sample solution in the transport capillary are further separated through each of the plurality of separation capillaries by an appropriate capillary electrophoresis mode.

76. The apparatus according to claim 40, where the at least one separation capillary is a plurality of separation capillaries which are aligned substantially parallel respect to each other.

77. The apparatus according to claim 76, where the transport capillary is coupled to each of the plurality of separation capillaries in a staggered manner.

78. A system for replacing a plurality of affinity ligands adapted to attract at least one analyte of interest from a sample solution, the system comprising:

a first capillary system including a plurality of separation capillaries intersecting a transport capillary forming a first plurality of analyte concentrators, where each analyte concentrator attracts a first predetermined set of analytes of interest from a sample solution from the transport capillary and each analyte concentrator is surrounded by valves on the transport capillary and the respective separation capillary to localize the analyte concentrator; and

an electrophoresis apparatus having a platform adapted to releasably couple to the capillary system.

79. The system according to claim 78, further including a second capillary system having a second plurality of analyte concentrators capable of attracting a second predetermined set of analytes of interest that is different from the first predetermined set of analytes of interest.

80. An electrophoresis apparatus comprising:

a plurality of separation capillaries capable of directing flow of fluid; and

a transport capillary coupled to the plurality of separation capillaries to form a plurality of analyte concentrators at the coupled areas capable of attracting at least one analyte of interest from a sample solution that passes through the analyte concentrators, where the transport capillary is staggered along at least one of the plurality of separation capillaries so that the analyte concentrator formed along the at least one of the separation capillaries is elongated.

81. The apparatus according to claim 80, further including:

plurality of valves located on the transport capillary and on the plurality of separation capillaries, where the valves on the transport capillary control the flow of the sample solution through the transport capillary and the valves on the plurality of separation capillaries control the flow of fluid through each of the plurality of separation capillaries, whereby each of the analyte concentrators can be localized by the valves on the transport capillary and the plurality of separation capillaries.

82. The apparatus according to claim 80, where the analyte concentrator includes affinity ligands that are covalently bound to the inner wall of the analyte concentrator, where the affinity ligands are attracted to at least one analyte of interest from the sample solution.

83. The apparatus according to claim 82, where the affinity ligands in each of the analyte concentrators are a plurality of different affinity ligands that attract a plurality of analytes of interest from the sample solution.

84. The apparatus according to claim 80, where each of the analyte concentrator includes a matrix-assembly that is retained within the analyte concentrator by pressure-resistant porous end walls disposed in the transport capillary and the corresponding separation capillary.

85. The apparatus according to claim 80, where each of the separation capillaries has an inlet and an outlet, where the analyte concentrator for the respective separation capillary is

between the inlet and the outlet, further including a second capillary coupled to the respective separation capillary between the analyte concentrator and the outlet to provide a second fluid to the respective separation capillary away from the analyte concentrator.

86. The apparatus according to claim 80, where each of the analyte concentrator is a microextraction device adapted to replace immobilized affinity ligands within the microextraction device.

87. An electrophoresis apparatus comprising:

a plurality of separation capillaries, each separation capillary having an inlet and an outlet capable of directing flow of first fluid from the inlet to the outlet;

a transport capillary coupled to the plurality of separation capillaries to form a plurality of analyte concentrators at the coupled areas capable of attracting at least one analyte of interest from a sample solution that passes through the analyte concentrators; and

an auxiliary capillary coupled to at least one of the separation capillaries between the analyte concentrator and the outlet to provide a second fluid to the at least one of the separation capillaries so that the second fluid flows towards the outlet away from the analyte concentrator.

88. The apparatus according to claim 87, further including:

a purality of valves located on the transport capillary and on the plurality of separation capillaries, where the valves on the transport capillary control the flow of the sample solution through the transport capillary and the valves on the plurality of separation capillaries control the flow of the first fluid through each of the plurality of separation capillaries, whereby each of the analyte concentrators can be localized by the valves on the transport capillary and the plurality of separation capillaries.

89. The apparatus according to claim 87, where the first fluid is elution buffer that passes through the analyte concentrators to release the analyte of interest from the analyte concentrators.

90. The apparatus according to claim 87, where the second fluid is a separating buffer provided away from the analyte concentrators towards the detection area to separate the released analyte of interest.

91. A method of forming a substantially consistent Fab fragment, the method comprising:

freeing the glycosylated IgG of sugar by at least one glycosidase to form a deglycosylated IgG;

cutting the deglycosylated IgG by pepsin to produce a F(ab') 2 fragment; and

cutting the disulfide bridge of the F(ab') 2 fragment by mercaptoethylamine to produce two Fab' fragments.

92. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one small-molecular-weight substance present in a simple solution.

93. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one biomolecule substance present in a simple solution.

94. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one globule structure present in a simple solution.

95. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one cellular structure present in a simple solution.

96. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one sub-cellular structure present in a simple solution.

97. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one small-molecular-weight substance present in a complex solution.

98. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one biomolecule substance present in a complex solution.

99. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one globule structure present in a complex solution.

100. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one cellular structure present in a complex solution.

101. The method according to claim 91, further including immobilizing the two Fab' fragments directly to the inner wall of an analyte concentrator to purify at least one sub-cellular structure present in a complex solution.

102. An electrophoresis apparatus comprising:

a transport channel capable of directing flow of a sample solution to be analyzed;

a plurality of separation channels coupled to the transport channel forming a plurality of analyte concentrators having affinity ligands capable of attracting at least one analyte of interest from the sample solution that passes through each of the analyte concentrators; and

a plurality of valves located on the transport channel and on the plurality of separation channels, where the valves on the transport channel control the flow of the sample solution through the transport channel and the valves on the plurality of separation channels control the flow of fluid through each of the plurality of separation channels, whereby each of the analyte concentrators can be localized by the valves on the transport channel and the plurality of separation channels.

103. The apparatus according to claim 102, where each of the valves is movable between a first position and a second position, where in the first position the valves are opened to allow the fluid to flow through the respective channel and in the second the valves are closed to substantially prevent the flow of fluid through the respective channel.

104. The apparatus according to claim 102, further including a matrix-assembly in each of the analyte concentrators, where at least one affinity ligand in each of the analyte concentrator is bound to the surface of the matrix-assembly.

105. The apparatus according to claim 104, where the matrix-assembly is a plurality of microstructures taken from the group consisting of beads, platelets, chips, fibers, polymers, globules, and filaments.

106. The apparatus according to claim 104, where the analyte concentrator retains the matrix-assembly by pressure-resistant porous end walls disposed in the transport channel and the separation channel.

107. The apparatus according to claim 104, where the matrix assembly includes a fixed architecture that is defined by beaded microstructures interconnected to each other and to a portion of the separation capillary.

108. The apparatus according to claim 104, where the matrix assembly includes a fixed architecture that is fabricated from polymeric microstructures interconnected to each other and to a portion of the separation capillary.

109. The apparatus according to claim 102, where each of the separation capillaries is capable of separating at least one analyte retained by at least one of the affinity ligands, after the analyte is released from the at least one affinity ligands.

110. The apparatus according to claim 109, where each of the separation capillaries is capable of separating at least one of the released analyte from the affinity ligands by at least one mode of capillary electrophoresis.

111. The apparatus according to claim 102, where each of the separation channels has an inlet and an outlet, where the analyte concentrator for the respective separation channel is between the inlet and the outlet, further including an auxiliary channel coupled to the respective separation channel between the analyte concentrator and the outlet to provide a second fluid to the respective separation channel away from the analyte concentrator.

112. The apparatus according to claim 102, further including an auxiliary analyte concentrator downstream from the analyte concentrator on one of the separation channels, the auxiliary analyte concentrator having affinity ligands capable of retaining chromophores to bind to the at least one analyte of interest released from the analyte concentrator to improve the sensitivity and selectivity of the at least one analyte of interest.

113. The apparatus according to claim 102, where each separation channel has a different configuration than the other separation channels and is filled with an electrically conductive fluid.

114. The apparatus according to claim 102, where each separation channel has a different configuration than the other separation channels and is filled with a gel matrix and an electrically conductive fluid.

115. The apparatus according to claim 102, where each of the analyte concentrators has an independent temperature controlled system.

116. The apparatus according to claim 102, where each of the separation channels has an independent temperature controlled system.

117. The apparatus according to claim 102, where each of the separation channels is in a linear configuration.

118. The apparatus according to claim 102, where each of the separation capillaries is in a serpentine configuration.

119. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of purifying at least one analyte present in a simple solution.

120. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of purifying at least one analyte in a complex solution.

121. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing a chemical reaction.

122. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing multi-component chemical reactions.

123. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of performing a biochemical reaction.

124. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are immobilized and are capable of multi-component biochemical reactions.

125. The apparatus according to claim 102, where each of the analyte concentrators has an encapsulated subcellular structure to carry drug metabolism studies.

126. The apparatus according to claim 102, where each of the analyte concentrators has an encapsulated cellular structure to carry drug metabolism studies.

127. The apparatus according to claim 102, where each of the analyte concentrators has an acoustic micromixing system to improve the reaction in the analyte concentrators.

128. The apparatus according to claim 102, where each of the analyte concentrators has a microwave pulse system to improve the reaction in the analyte concentrators.

129. The apparatus according to claim 102, where the affinity ligands in each of the analyte concentrators are covalently bound to a matrix assembly within the analyte concentrator.

130. The apparatus according to claim 102, where two adjacent transport channels are staggered at each of the analyte concentrators to elongate each of the analyte concentrators.

131. The apparatus according to claim 102, where the immobilized affinity ligands are bound to a portion of the inner wall of the separation channel forming the analyte concentrator.

132. The apparatus according to claim 102, where the immobilized affinity ligands in each of the analyte concentrators attract at least one analyte of interest from the sample solution having a wide range of concentrations.

133. The apparatus according to claim 102, further including an outlet channel near a detection area, where the plurality of separation channels merge at the outlet channel and

an outlet valve is provided on each of the separation channels near the outlet channel to sequentially control the direction of the fluid through the desired separation channel and towards the location of the detection area with the outlet valve being opened.

134. The apparatus according to claim 102, further including at least one detector for identifying, quantifying, and characterizing the analyte of interest released from the affinity ligands and passing through at least one of the plurality separation channels.

135. The apparatus according to claim 134, where the detector includes a detection system that is selected from a group consisting of ultraviolet, fluorescence, conductivity, electrochemical, radioactive, mass spectrometer, circular dichroism, and nuclear magnetic resonance.

136. The apparatus according to claim 102, where the analyte concentrator is a microextraction device using immobilized affinity ligands within the microextraction device.

137. The apparatus according to claim 136, where the analyte concentrator has a transport port adapted to couple to the transport channel and a separation port adapted to couple to the separation channel, where the transport and separation ports intersect to form a concentration area to retain the affinity ligands.

138. The apparatus according to claim 136, where the concentration area is surrounded by bulging members to retain the matrix containing immobilized affinity ligands within the concentration area.

139. The apparatus according to claim 136, further including a plurality of valves movably coupled to the transport and separation ports to surround the concentration area to control the flow of the sample solution through the transport port and flow of fluid through the separation port.

140. The apparatus according to claim 102, where the transport and separation channels have openings, where the opening for the transport channel is larger than the openings for the separation channel.

141. An electrophoresis apparatus having a transport channel adapted to provide a sample solution to be analyzed and at least one separation channel to provide buffer solution, the electrophoresis apparatus comprising:

at least one analyte concentrator at the intersection between the transport channel and the at least one separation channel, the at least one analyte concentrator capable of attracting at least one analyte of interest from the sample solution; and

a plurality of valves on the transport and separation channels to surround the analyte concentrator to control the flow of the sample and buffer solutions to the analyte concentrator.

142. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly that is free and retained within the concentrator by frits provided in the transport and separation channels.

143. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly that is a plurality of microstructures selected from a group consisting of beads, platelets, chips, fibers, polymers, globules, and filaments.

144. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly having movable bead microstructures retained within the concentrator by pressure-resistant porous end walls disposed in the transport channel and the separation channel.

145. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly having a fixed architecture defined by interconnected beaded microstructures.

146. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly having a fixed architecture that is defined by magnetic beaded microstructures capable of being retained by magnetic attraction.

147. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes a matrix assembly having a fixed architecture that is defined by interconnected polymeric microstructures.

148. The electrophoresis apparatus according to claim 147, where the polymeric microstructures are formed from a monolithic lattice.

149. The electrophoresis apparatus according to claim 147, where the polymeric microstructures are formed from a sol-gel lattice.

150. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are adsorbed by beaded structures, and the affinity ligands are attracted to the at least one analyte of interest from the sample solution.

151. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are adsorbed by polymeric structures, and the affinity ligands are attracted to the at least one analyte of interest.

152. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are adsorbed to a portion of the inner wall of the separation channel forming the analyte concentrator, and the affinity ligands are attracted to the at least one analyte of interest.

153. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are covalently bound to beaded structures, and the affinity ligands are attracted to the at least one analyte of interest.

154. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are covalently bound to polymeric structures, and the affinity ligands are attracted to at least one analyte of interest.

155. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are covalently bound to a portion of the inner wall of the separation channel forming the analyte concentrator, and the affinity ligands are attracted to at least one analyte of interest.

156. The electrophoresis apparatus according to claim 141, where the analyte concentrator includes affinity ligands that are selected from a group consisting of whole antibodies, antibody fragments, lectins, aptamers, chemical dyes, protein A, protein G, substrates, enzymes, proteins, peptides, DNA, RNA, oligonucleotides, carbohydrates, cation exchange resins, anion exchange resins, immobilized metal affinity capture resins, mixed-mode resins, ions, aminoacids, monossacharides, fatty acids, vitamins, metabolites, viruses, bacteria, cells, and subcellular organelles.

157. The electrophoresis apparatus according to claim 156, further including a matrix assembly with at least one of the affinity ligands.

158. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands purify at least one analyte present in a simple solution having a wide range of concentrations.

159. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands purify at least one analyte in a complex solution having a wide range of concentrations.

160. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform a chemical reaction.

161. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform multi-component chemical reactions.

162. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform a biochemical reaction.

163. The apparatus according to claim 141, where each of the analyte concentrators has affinity ligands that are immobilized onto each of the respective analyte concentrators, where the affinity ligands perform multi-component biochemical reactions.

164. The apparatus according to claim 141, where each of the analyte concentrators has an encapsulated subcellular structure to carry drug metabolism studies.

165. The apparatus according to claim 141, where each of the analyte concentrators has an encapsulated cellular structure to carry drug metabolism studies.

166. The apparatus according to claim 141, where each of the analyte concentrators has an acoustic micromixing system to improve the reaction in the analyte concentrators.

167. The apparatus according to claim 141, where each of the analyte concentrators has a microwave pulse system to improve the reaction in the at least one analyte concentrator.

168. The apparatus according to claim 141, where each of the analyte concentrators include antibodies immobilized on the surface of a matrix-like assembly.

169. The apparatus according to claim 141, where each of the analyte concentrators include antibody fragments immobilized to the surface of a matrix-like assembly.

170. The apparatus according to claim 141, where the valves on the transport channel are opened and the valves on the separation channel are closed to allow the sample solution to pass through the concentrator.

171. The apparatus according to claim 141, where the valves on the transport channel are closed and the valves on the separation channel are opened to allow the buffer solution to pass through the concentrator.

172. The apparatus according to claim 141, where the plurality of valves include first and second valves on the transport channel and third and fourth valves on the separation channel, where the concentrator is between the first and second valves and between the third and fourth valves, where the first and second valves control the flow of sample solution to the concentrator and the third and fourth valves control the flow of buffer solution to the concentrator.

173. The apparatus according to claim 141, further including an auxiliary channel coupled to the separation channel downstream from the analyte concentrator to provide separation buffer to the separation channel through the auxiliary channel away from the at least one concentrator.

174. The apparatus according to claim 141, further including another analyte concentrator downstream from the analyte concentrator on one of the separation channels, the another analyte concentrator having affinity ligands capable of retaining chromophores to bind to the at least one analyte of interest released from the analyte concentrator to improve the sensitivity and selectivity of the at least one analyte of interest.

175. The apparatus according to claim 141, where the sample solution has a plurality of proteins with a variety of isoelectric point levels, and the transport channel provides a pH gradient and is subject to an electric field through the transport channel for isoelectric focusing separation of the proteins in the sample solution.

176. The apparatus according to claim 175, where the at least one separation channel is a plurality of separation channels, where the proteins that are separated from the sample solution in the transport channel are further separated through each of the plurality of separation channels by an appropriate capillary electrophoresis mode.

177. The apparatus according to claim 141, where the at least one separation channel is a plurality of separation channels which are aligned substantially parallel respect to each other.

178. The apparatus according to claim 177, where the transport capillary is coupled to each of the plurality of separation capillaries in a staggered manner.

179. A system for replacing a plurality of affinity ligands adapted to attract at least one analyte of interest from a sample solution, the system comprising:

a first channel system including a plurality of separation channels intersecting a transport channel forming a first plurality of analyte concentrators, where each analyte concentrator attracts a first predetermined set of analytes of interest from a sample solution from the transport channel and each analyte concentrator is surrounded by valves on the transport channel and the respective separation channel to localize the analyte concentrator; and

an electrophoresis apparatus having a platform adapted to releasably couple to the channel system.

180. The system according to claim 179, further including a second capillary system having a second plurality of analyte concentrators capable of attracting a second predetermined set of analytes of interest that is different from the first predetermined set of analytes of interest.

181. An electrophoresis apparatus comprising:

a plurality of separation channels capable of directing flow of fluid; and

a transport channel coupled to the plurality of separation channels to form a plurality of analyte concentrators at the coupled areas capable of attracting at least one analyte of interest from a sample solution that passes through the analyte concentrators, where the transport channel is staggered along at least one of the plurality of separation channels so that the analyte concentrator formed along the at least one of the separation channels is elongated.

182. The apparatus according to claim 181, further including:

a plurality of valves located on the transport channel and on the plurality of separation channels, where the valves on the transport channel control the flow of the sample solution through the transport channel and the valves on the plurality of separation channels control the flow of fluid through each of the plurality of separation channels, whereby each of the analyte concentrators can be localized by the valves on the transport channel and the plurality of separation channels.

183. The apparatus according to claim 181, where the analyte concentrator includes affinity ligands that are covalently bound to the inner wall of the analyte concentrator, where the affinity ligands are attracted to at least one analyte of interest from the sample solution.

184. The apparatus according to claim 183, where the affinity ligands in each of the analyte concentrators are a plurality of different affinity ligands that attract a plurality of analytes of interest from the sample solution.

185. The apparatus according to claim 181, where each of the analyte concentrator includes a matrix-assembly that is retained within the analyte concentrator by pressure-resistant porous end walls disposed in the transport channel and the corresponding separation channel.

186. The apparatus according to claim 181, where each of the separation channels has an inlet and an outlet, where the analyte concentrator for the respective separation channel is

between the inlet and the outlet, further including a second channel coupled to the respective separation channel between the analyte concentrator and the outlet to provide a second fluid to the respective separation channel away from the analyte concentrator.

187. The apparatus according to claim 181, where each of the analyte concentrator is a microextraction device adapted to replace immobilized affinity ligands within the microextraction device.

188. An electrophoresis apparatus comprising:

a plurality of separation channels, each separation channel having an inlet and an outlet capable of directing flow of first fluid from the inlet to the outlet;

a transport channel coupled to the plurality of separation channels to form a plurality of analyte concentrators at the coupled areas capable of attracting at least one analyte of interest from a sample solution that passes through the analyte concentrators; and

an auxiliary channel coupled to at least one of the separation channels between the analyte concentrator and the outlet to provide a second fluid to the at least one of the separation channels so that the second fluid flows towards the outlet away from the analyte concentrator.

189. The apparatus according to claim 188, further including:

a plurality of valves located on the transport channel and on the plurality of separation channels, where the valves on the transport channel control the flow of the sample solution through the transport channel and the valves on the plurality of separation channels control the flow of the first fluid through each of the plurality of separation channels, whereby each of the analyte concentrators can be localized by the valves on the transport channel and the plurality of separation channels.

190. The apparatus according to claim 188, where the first fluid is elution buffer that passes through the analyte concentrators to release the analyte of interest from the analyte concentrators.

191. The apparatus according to claim 188, where the second fluid is a separating buffer provided away from the analyte concentrators towards the detection area to separate the released analyte of interest.

192. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired small-molecular-weight substance present in a simple solution.

193. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired biomolecule substance present in a simple solution.

194. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired globule structure present in a simple solution.

195. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired cellular structure present in a simple solution.

196. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired sub-cellular structure present in a simple solution.

197. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired small-molecular-weight substance present in a complex solution.

198. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired biomolecule substance present in a complex solution.

199. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired globule structure present in a complex solution.

200. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired cellular structure present in a complex solution.

201. The apparatus according to claim 188, further including affinity ligands that are immobilized directly to the inner wall of each of the analyte concentrators to purify at least one desired sub-cellular structure present in a complex solution.

202. An electrophoresis apparatus, comprising:

means for isolating a plurality of analyte of interests from a sample solution into a corresponding plurality of areas; and

means for localizing the plurality of areas to improve the means for isolating the plurality of analyte of interests.

203. The apparatus according to claim 202, further including means for detecting the plurality of analyte of interests.

204. The apparatus according to claim 202, further including means for re-using the means for isolating the plurality of analyte of interests.

205. The apparatus according to claim 202, further including means for replacing the means for isolating the plurality of analytes with another means for isolating a different plurality of analyte of interests.

206. The apparatus according to claim 202, further including means for controlling the microenvironment of the plurality of areas to improve the means for isolating the plurality of analyte of interests.

207. A method of identifying a plurality of analyte of interests from a sample solution, the method comprising:

providing a plurality of areas where each area is capable of having affinity for at least one analyte of interest from the sample solution; and

localizing each of the plurality of areas having affinity for at least one analyte of interest.

208. The method according to claim 207, further including:

immobilizing affinity ligands within each of the plurality of areas, where the affinity ligands have attraction to at least one analyte of interest from the sample solution.

209. The method according to claim 207, further including:

incorporating affinity ligands having attraction to at least one analyte of interest from the sample solution within each of the plurality of areas; and

retaining the affinity ligands within each of the plurality of areas.

210. The method according to claim 207, further including:

bonding affinity ligands to a matrix assembly, where the affinity ligands have attraction to at least one analyte of interest from the sample solution; and

retaining the matrix assembly within each of the plurality of areas.

211. The method according to claim 207, further including:

bonding affinity ligands having attraction to at least one analyte of interest from the sample solution to the inner wall of each of the plurality of areas.

212. The method according to claim 207, further including:

purifying at least one analyte present in a simple solution in each of the plurality of areas.

213. The method according to claim 207, further including:

purifying at least one analyte present in a complex solution in each of the plurality of areas.

214. The method according to claim 207, further including:

performing a chemical reaction in each of the plurality of areas.

215. The method according to claim 207, further including:

performing multi-component chemical reactions in each of the plurality of areas.

216. The method according to claim 207, further including:

performing a biochemical reaction in each of the plurality of areas.

217. The method according to claim 207, further including:

performing multi-component biochemical reaction in each of the plurality of areas.

218. The method according to claim 207, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of areas; and

micromixing acoustically the plurality of areas to improve the step of isolating.

219. The method according to claim 207, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of areas;

microreacting the at least one analyte of interest within each of the plurality of areas; and

micromixing acoustically the plurality of areas to improve the step of microreacting.

220. The method according to claim 207, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of areas; and

exposing microwave pulses to the plurality of areas to improve the step of isolating.

221. The method according to claim 207, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of areas;

microreacting the at least one analyte of interest within each of the plurality of areas; and

exposing microwave pulses to the plurality of areas to improve the step of microreacting.

222. The method according to claim 207, further including:

controlling the flow of the sample solution to each of the plurality of areas.

223. The method according to claim 207, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of areas; and

controlling the microenvironment of each of the plurality of areas to enhance the isolating step.

224. The method according to claim 207, further including:

replacing the affinity ligands in each of the plurality of areas.

225. The method according to claim 207, further including:

conditioning the plurality of areas.

226. The method according claim 207, further including:

concentrating the sample solution to form a concentrated sample solution; and

isolating at least one analyte of interest from the concentrated sample solution into each of the plurality of areas.

227. The method according to claim 207, further including:

elongating each of the plurality of areas to attract additional analyte of interests.

228. The method according to 209, further including:

orientating the affinity ligands with respect to each other within each of the plurality of areas.

229. The method according to claim 207, further including:

releasing the analyte of interest from each of the plurality of areas in a predetermined sequential order.

230. The method according to claim 207, further including:

releasing the analyte of interest from each of the plurality of areas simultaneously.

231. A method of identifying a plurality of analyte of interests from a sample solution, the method comprising:

intersecting a plurality of separation capillaries to a transport capillary to form a plurality of analyte concentrators, where each analyte concentrator has affinity for at least one analyte of interest from the sample solution; and

localizing each of the plurality of analyte concentrators to enhance each of the analyte concentrators from attracting the at least one analyte of interest from the sample solution.

232. The method according to claim 231, where the step of localizing includes:

controlling the flow of the sample solution through the transport capillary towards each of the analyte concentrators.

233. The method according to claim 231, where the step of localizing includes:

controlling the flow of a buffer solution through each of the plurality of separation capillaries towards each of the respective analyte concentrators.

234. The method according to claim 231, where the step of localizing includes:

surrounding each of the analyte concentrators with valves capable of opening or closing the transport capillary and the plurality of separation capillaries.

235. The method according to claim 234, further including:

closing the valves on the plurality of separation capillaries; and

opening the valves on the transport capillary to allow the sample solution to pass through each of the plurality of analyte concentrators to attract at least one analyte of interest from the sample solution.

236. The method according to claim 231, further including:

staggering the transport capillary at each of the plurality of separation capillaries to elongate the analyte concentrator formed at each of the plurality of separation capillaries.

237. The method according to claim 231, further including:

eluting the at least one analyte of interest from each of the plurality of analyte concentrators; and

separating the at least one analyte of interest from other closely related analyte of interest away from each of the respective plurality of analyte concentrators.

238. The method according to claim 231, further including:

immobilizing affinity ligands within each of the plurality of analyte concentrators, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution.

239. The method according to claim 231, further including:

incorporating affinity ligands having attraction to the at least one analyte of interest from the sample solution within each of the plurality of analyte concentrators; and

retaining the affinity ligands within each of the plurality of analyte concentrators.

240. The method according to claim 231, further including:

bonding affinity ligands to a matrix assembly, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution; and

retaining the matrix assembly within each of the plurality of analyte concentrators.

241. The method according to claim 231, further including:

bonding affinity ligands to a matrix assembly that is ionized, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution; and

incorporating the matrix assembly within each of the plurality of analyte concentrators;

magnetizing each of the plurality of analyte concentrators to retain the matrix assembly with the affinity ligands within each of the plurality of analyte concentrators.

242. The method according to claim 231, further including:

bonding affinity ligands having attraction to the at least one analyte of interest from the sample solution to the inner wall of each of the plurality of analyte concentrators.

243. The method according to claim 231, further including:

purifying at least one analyte present in a simple solution in each of the plurality of analyte concentrators.

244. The method according to claim 231, further including:

purifying at least one analyte present in a complex solution in each of the plurality of analyte concentrators.

245. The method according to claim 231, further including:

performing a chemical reaction in each of the plurality of analyte concentrators.

246. The method according to claim 231, further including:

performing multi-component chemical reactions in each of the plurality of analyte concentrators.

247. The method according to claim 231, further including:

performing a biochemical reaction in each of the plurality of analyte concentrators.

248. The method according to claim 231, further including:

performing multi-component biochemical reaction in each of the plurality of analyte concentrators.

249. The method according to claim 231, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

micromixing acoustically the plurality of analyte concentrators to improve the step of isolating.

250. The method according to claim 231, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators;

microreacting the at least one analyte of interest within each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of microreacting.

251. The method according to claim 231, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of isolating.

252. The method according to claim 231, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators;

microreacting the at least one analyte of interest within each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of microreacting.

253. The method according to claim 231, further including:

coiling at least one of the plurality of separation capillaries downstream from the respective analyte concentrator.

254. The method according to claim 231, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

controlling the microenvironment of each of the plurality of analyte concentrators to enhance the isolating step.

255. The method according to claim 231, further including:

replacing the affinity ligands in each of the plurality of analyte concentrators.

256. The method according to claim 231, further including:

conditioning the plurality of analyte concentrators.

257. The method according claim 231, further including:

concentrating the sample solution to form a concentrated sample solution; and

isolating at least one analyte of interest from the concentrated sample solution into each of the plurality of analyte concentrators.

258. The method according to claim 231, further including:

replacing the plurality of analyte concentrators with another set of a plurality of analyte concentrators having affinity for a different analyte of interest from the sample solution.

259. The method according to 231, further including:

incorporating affinity ligands having attraction to at least one analyte of interest into each of the analyte concentrators; and

orientating the affinity ligands with respect to each other within each of the plurality of analyte concentrators.

260. The method according to claim 231, further including:

releasing the analyte of interest from each of the plurality of analyte concentrators in a predetermined sequential order.

261. The method according to claim 231, further including:

releasing the analyte of interest from each of the plurality of analyte concentrators simultaneously.

262. The method according to claim 231, further including:

providing an electric field through the plurality of separation capillaries to pass buffer solutions through the separation capillaries.

263. The method according to claim 231, further including:

pressurizing the plurality of separation capillaries to pass buffer solutions through the separation capillaries.

264. The method according to claim 231, further including:

vacuuming the plurality of separation capillaries to migrate buffer solutions through the separation capillaries.

265. The method according to claim 231, further including:

providing a pH gradient and an electric filed through the transport capillary;

isoelectric focusing of proteins with a variety of isoelectric point levels in the sample solution through the transport capillary; and

separating the proteins by capillary electrophoresis through the plurality of separation capillaries.

266. The method according to claim 231, further including:

incorporating affinity ligands having attraction to at least one analyte of interest into each of the analyte concentrators; and

re-using the affinity ligands to attract the at least one analyte of interest from another sample solution.

267. The method according to claim 266, where the step of re-using includes:

first conditioning the transport capillary and the plurality of separation capillaries;

passing the sample solution through the transport capillary towards the plurality of analyte concentrators;

isolating at least one analyte of interest from the sample solution at each of the plurality of analyte concentrators;

cleaning each of the analyte concentrators to remove unwanted materials present in the plurality of analyte concentrators;

second conditioning of the transport capillary and the plurality of separation capillaries;

eluting each of the analyte concentrators with at least one desired analyte to release the analyte of interest from the step of isolating; and

separating the at least one analyte of interest from other closely related analyte of interest from each of the respective plurality of analyte concentrators.

268. The method according to claim 231, further including:

incorporating a plurality of different sets of affinity ligands into each of the plurality of analyte concentrators, where each set of affinity ligands attract an analyte of interest from the sample solution, whereby each analyte concentrator attracts a plurality of analyte of interests.

269. A method of identifying a plurality of analyte of interests from a sample solution, the method comprising:

intersecting a plurality of separation channels to a transport channel to form a plurality of analyte concentrators, where each analyte concentrator has affinity for at least one analyte of interest from the sample solution; and

localizing each of the plurality of analyte concentrators to enhance each of the analyte concentrators from attracting the at least one analyte of interest from the sample solution.

270. The method according to claim 269, where the step of localizing includes:

controlling the flow of the sample solution through the transport channel towards each of the analyte concentrators.

271. The method according to claim 269, where the step of localizing includes:

controlling the flow of a buffer solution through each of the plurality of separation channels towards each of the respective analyte concentrators.

272. The method according to claim 269, where the step of localizing includes:

surrounding each of the analyte concentrators with valves capable of opening or closing the transport channel and the plurality of separation channels.

273. The method according to claim 269, further including:

closing the valves on the plurality of separation channels; and

opening the valves on the transport channel to allow the sample solution to pass through each of the plurality of analyte concentrators to attract at least one analyte of interest from the sample solution.

274. The method according to claim 269, further including:

staggering the transport channel at each of the plurality of separation channels to elongate the analyte concentrator formed at each of the plurality of separation channels.

275. The method according to claim 269, further including:

eluting the at least one analyte of interest from each of the plurality of analyte concentrators; and

separating the at least one analyte of interest from other closely related analyte of interest away from each of the respective plurality of analyte concentrators.

276. The method according to claim 269, further including:

immobilizing affinity ligands within each of the plurality of analyte concentrators, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution.

277. The method according to claim 269, further including:

incorporating affinity ligands having attraction to the at least one analyte of interest from the sample solution within each of the plurality of analyte concentrators; and

retaining the affinity ligands within each of the plurality of analyte concentrators.

278. The method according to claim 269, further including:

bonding affinity ligands to a matrix assembly, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution; and

retaining the matrix assembly within each of the plurality of analyte concentrators.

279. The method according to claim 269, further including:

bonding affinity ligands to a matrix assembly that is ionized, where the affinity ligands have attraction to the at least one analyte of interest from the sample solution; and

incorporating the matrix assembly within each of the plurality of analyte concentrators;

magnetizing each of the plurality of analyte concentrators to retain the matrix assembly with the affinity ligands within each of the plurality of analyte concentrators.

280. The method according to claim 269, further including:

bonding affinity ligands having attraction to the at least one analyte of interest from the sample solution to the inner wall of each of the plurality of analyte concentrators.

281. The method according to claim 269, further including:

purifying at least one analyte present in a simple solution in each of the plurality of analyte concentrators.

282. The method according to claim 269, further including:

purifying at least one analyte present in a complex solution in each of the plurality of analyte concentrators.

283. The method according to claim 269, further including:

performing a chemical reaction in each of the plurality of analyte concentrators.

284. The method according to claim 269, further including:

performing multi-component chemical reactions in each of the plurality of analyte concentrators.

285. The method according to claim 269, further including:

performing a biochemical reaction in each of the plurality of analyte concentrators.

286. The method according to claim 269, further including:

performing multi-component biochemical reaction in each of the plurality of analyte concentrators.

287. The method according to claim 269, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

micromixing acoustically the plurality of analyte concentrators to improve the step of isolating.

288. The method according to claim 269, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators;

microreacting the at least one analyte of interest within each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of microreacting.

289. The method according to claim 269, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of isolating.

290. The method according to claim 269, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators;

microreacting the at least one analyte of interest within each of the plurality of analyte concentrators; and

exposing microwave pulses to the plurality of analyte concentrators to improve the step of microreacting.

291. The method according to claim 269, further including:

elongating each of the plurality of analyte concentrators to attract additional analyte of interest from the sample solution.

292. The method according to claim 269, further including:

isolating at least one analyte of interest from the sample solution into each of the plurality of analyte concentrators; and

controlling the microenvironment of each of the plurality of analyte concentrators to enhance the isolating step.

293. The method according to claim 269, further including:

replacing the affinity ligands in each of the plurality of analyte concentrators.

294. The method according to claim 269, further including:

conditioning the plurality of analyte concentrators.

295. The method according claim 269, further including:

concentrating the sample solution to form a concentrated sample solution; and

isolating at least one analyte of interest from the concentrated sample solution into each of the plurality of analyte concentrators.

296. The method according to claim 269, further including:

replacing the plurality of analyte concentrators with another set of a plurality of analyte concentrators having affinity for a different analyte of interest from the sample solution.

297. The method according to 269, further including:

incorporating affinity ligands having attraction to at least one analyte of interest into each of the analyte concentrators; and

orientating the affinity ligands with respect to each other within each of the plurality of analyte concentrators.

298. The method according to claim 269, further including:

releasing the analyte of interest from each of the plurality of analyte concentrators in a predetermined sequential order.

299. The method according to claim 269, further including:

releasing the analyte of interest from each of the plurality of analyte concentrators simultaneously.

300. The method according to claim 269, further including:

providing an electric field through the plurality of separation channels to pass buffer solutions through the separation channels.

301. The method according to claim 269, further including:

pressurizing the plurality of separation channels to pass buffer solutions through the separation channels.

302. The method according to claim 269, further including:

vacuuming the plurality of separation channels to migrate buffer solutions through the separation channels.

303. The method according to claim 269, further including:

providing a pH gradient and an electric filed through the transport channel;

isoelectric focusing of proteins with a variety of isoelectric point levels in the sample solution through the transport channel; and

separating the proteins by channel electrophoresis through the plurality of separation channels.

304. The method according to claim 269, further including:

incorporating affinity ligands having attraction to at least one analyte of interest into each of the analyte concentrators; and

re-using the affinity ligands to attract the at least one analyte of interest from another sample solution.

305. The method according to claim 304, where the step of re-using includes:

first conditioning the transport channel and the plurality of separation channels;

passing the sample solution through the transport channel towards the plurality of analyte concentrators;

isolating at least one analyte of interest from the sample solution at each of the plurality of analyte concentrators;

cleaning each of the analyte concentrators to remove unwanted materials present in the plurality of analyte concentrators;

second conditioning of the transport channel and the plurality of separation channels;

eluting each of the analyte concentrators with at least one desired analyte to release the analyte of interest from the step of isolating; and

separating the at least one analyte of interest from other closely related analyte of interest from each of the respective plurality of analyte concentrators.

306. The method according to claim 269, further including:

incorporating a plurality of different sets of affinity ligands into each of the plurality of analyte concentrators, where each set of affinity ligands attract an analyte of interest from the sample solution, whereby each analyte concentrator attracts a plurality of analyte of interests.

307. A system for detecting biomarkers associated with a disease, the system comprising:

an electrophoresis apparatus capable of isolating a plurality of biomarkers associating with a disease from a specimen and detecting data corresponding to each of the plurality of biomarkers;

a CPU communicateably coupled to the electrophoresis apparatus for operating the electrophoresis apparatus to isolate the plurality of biomarkers, where the CPU is capable of receiving the data corresponding to the plurality of biomarkers; and

a memory having a plurality of reference data corresponding to a plurality of diseases, where the CPU compares the data from the electrophoresis apparatus to the plurality of reference data to determine whether the data corresponds to any one of the plurality of diseases.

308. The system according to claim 303, further including:

an evaluator communicateably coupled to the CPU to analyze the data and provide feedback whether the data corresponds to a disease.

309. The system according to claim 307, where the electrophoresis apparatus includes a plurality of analyte concentrators formed at the intersection between a transport capillary and a plurality of separation capillaries, where each of the analyte concentrators has at least one affinity ligand capable of attracting at least one biomarker from the specimen.

310. The system according to claim 307, where the electrophoresis apparatus includes a plurality of analyte concentrators formed at the intersection between a transport channel and a plurality of separation channels, where each of the analyte concentrators has at least one affinity ligand capable of attracting at least one biomarker from the specimen.

311. The system according to claim 307, where the electrophoresis apparatus includes a separation capillary having a plurality of affinity ligands bound to the inner wall of the separation capillary, where each of the affinity ligands is capable of attracting at least one biomarker from the specimen.

312. A method for detecting a disease from a specimen provided by an individual, the method comprising:

providing a sample cup adapted to receive the specimen to analyze whether the specimen has a plurality of biomarkers associated with a disease;

automatically isolating the plurality of biomarkers from the specimen, if any;

detecting data corresponding to each of the plurality of biomarkers; and

analyzing the data to determine whether the data corresponds to a disease.

313. The method according to claim 312, where the step of analyzing is done by an evaluator to determine whether the data corresponds to the disease.

314. The method according to claim 313, further including:

retrieving a feedback from the evaluator regarding whether the data corresponds to the disease.

315. The method according to claim 312, where the step of analyzing is done by:

comparing the data with a plurality of reference data to determine whether the data corresponds to the disease.

316. The method according to claim 312, further including:

controlling the step of isolating by a CPU based on a predetermined set of instructions.

317. The method according to claim 312, further including:

selecting a system of capillaries with concentrators having affinity for a predetermined plurality of biomarkers associated with the disease; and

incorporating the system of capillaries to a platform of an electrophoresis apparatus.

318. The method according to claim 312, further including:

selecting a system of channels with concentrators having affinity for a predetermined plurality of biomarkers associated with the disease; and

incorporating the system of channels to a platform of an electrophoresis apparatus.

319. The method according to claim 312, where the step of isolating is done at the individual's desired location.

320. The method according to claim 312, where the step of isolating is done at the individual's desired location and the step of comparing the data is done at different locations.

321. The method according to claim 312, where the steps of isolating and comparing the data is done at different locations.